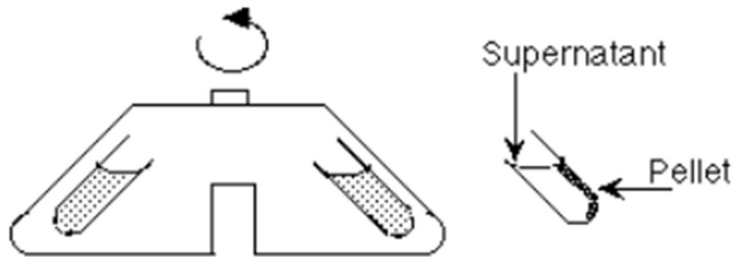


Motion in a Circle

- 1) A sample of blood is placed in a centrifuge of radius 15cm . The mass of a red blood cell is $3 \times 10^{-16}\text{kg}$, and the magnitude of the force acting on it as it settles out of the plasma is $4 \times 10^{-11}\text{N}$. At how many revolution per second should the centrifuge be operated?



- 2) A centrifuge having a length of the bowl of 0.1016m is rotating at $\omega = 1000\text{ rev}/\text{min}$ at an angle of $\theta = 15^\circ$ with respect to vertical axis.
- Calculate the centrifuge force developed in terms of gravity force?
 - Compare this force to that for a bowl with a radius of 0.2032m rotating at the same rev/min ?



- 3) To separate 10g precipitate of muddy water, it is placed in a horizontal centrifuge rotating with a constant speed of $85\frac{\text{m}}{\text{s}}$ in a distance of 20cm away from center of rotation. Find the magnitude of force exerted the soil?